

**SAF-B01-090**  
**100-NR-1 TSD Sites R. A. Verification Sampling - Soil**  
**FINAL DATA PACKAGE**

**FAX RESULTS TO:**

Rick Kerkow

372-8655

N/A  
INITIAL/DATE**VERIFICATION OF CLIENT RECEIPT:**

Phone or CC:Mail to Rick Kerkow

N/A  
INITIAL/DATE**COMPLETE COPY OF DATA PACKAGE TO:**

Rick Kerkow

X5-60

BR 2 9/23/03  
INITIAL/DATE

Jeanette Duncan

BR  
INITIAL/DATE**COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)**

SDG

H2318

SAF-B01-090

Rad only

Chem only

☒ Rad & Chem☒ Complete

Partial

**Waste Site: 116-N-1 Trench SZ Verification**

**RECEIVED**  
OCT 30 2003  
**EDMC**



17 September 2003

Joan Kessner  
Bechtel-Hanford, Inc.  
3190 Washington Way  
MSIN H9-03  
Richland, WA 99352

**Subject: Contract No. 630**  
**Analytical Data Package**

Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0308L247
SDG #	H2318
SAF #	B01-090
Date Received	8-20-03
# Samples	1
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,  
Lionville Laboratory Incorporated

  
Orlette S. Johnson  
Project Manager



Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B01-090 H2318

DATE RECEIVED: 08/20/03

LVL LOT # :0308L247

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

J00WN0

CHROMIUM, TOTAL	001	S	03L0496	08/13/03	09/02/03	09/02/03
CHROMIUM, TOTAL	001 REP	S	03L0496	08/13/03	09/02/03	09/02/03
CHROMIUM, TOTAL	001 MS	S	03L0496	08/13/03	09/02/03	09/02/03

LAB QC:

CHROMIUM LABORATORY	LC1 BS	S	03L0496	N/A	09/02/03	09/02/03
CHROMIUM, TOTAL	MB1	S	03L0496	N/A	09/02/03	09/02/03





## Analytical Report

**Client:** TNU-HANFORD B01-090  
**LVL#:** 0308L247  
**SDG/SAF#:** H2318/B01-090

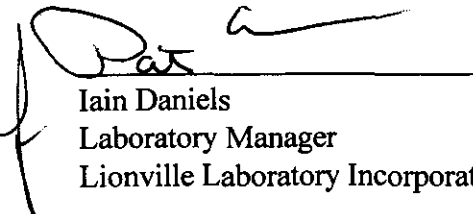
**W.O.#:** 11343-606-001-9999-00  
**Date Received:** 08-20-03

### METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. The preparation/method blank (MB) was within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. The laboratory control sample (LCS) was within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recovery was within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analysis was within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated  
jjw/m08-247

09-08-03  
Date

# METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 03082247

Leaching Procedure:   1310     1311     1312     Other:  

CLP Metals    Digestion and    Analysis Methods:   ILM03.0     ILM04.0  

Metals Digestion Methods:   3005A     3010A     3015     3020A   X  3050B     3051     200.7     SS17    
  Other:  

## Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Antimony	<u>  6010B  </u> <u>  7041<sup>s</sup>  </u>	<u>  200.7  </u> <u>  204.2  </u>			<u>  99  </u>
Arsenic	<u>  6010B  </u> <u>  7060A<sup>s</sup>  </u>	<u>  200.7  </u> <u>  206.2  </u>	<u>  3113B  </u>		<u>  99  </u>
Barium	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Beryllium	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Bismuth	<u>  6010B<sup>1</sup>  </u>	<u>  200.7<sup>1</sup>  </u>		<u>  1620  </u>	<u>  99  </u>
Boron	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Cadmium	<u>  6010B  </u> <u>  7131A<sup>s</sup>  </u>	<u>  200.7  </u> <u>  213.2  </u>			<u>  99  </u>
Calcium	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Chromium	<u>X  6010B  </u> <u>  7191<sup>s</sup>  </u>	<u>  200.7  </u> <u>  218.2  </u>			<u>  SS17  </u>
Cobalt	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Copper	<u>  6010B  </u> <u>  7211<sup>s</sup>  </u>	<u>  200.7  </u> <u>  220.2  </u>			<u>  99  </u>
Iron	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Lead	<u>  6010B  </u> <u>  7421<sup>s</sup>  </u>	<u>  200.7  </u> <u>  239.2  </u>	<u>  3113B  </u>		<u>  99  </u>
Lithium	<u>  6010B  </u> <u>  7430<sup>4</sup>  </u>	<u>  200.7  </u>		<u>  1620  </u>	<u>  99  </u>
Magnesium	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Manganese	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Mercury	<u>  7470A<sup>3</sup>  </u> <u>  7471A<sup>3</sup>  </u>	<u>  245.1<sup>2</sup>  </u> <u>  245.5<sup>2</sup>  </u>			<u>  99  </u>
Molybdenum	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Nickel	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Potassium	<u>  6010B  </u> <u>  7610<sup>4</sup>  </u>	<u>  200.7  </u> <u>  258.1<sup>4</sup>  </u>			<u>  99  </u>
Rare Earths	<u>  6010B<sup>1</sup>  </u>	<u>  200.7<sup>1</sup>  </u>		<u>  1620  </u>	<u>  99  </u>
Selenium	<u>  6010B  </u> <u>  7740<sup>s</sup>  </u>	<u>  200.7  </u> <u>  270.2  </u>	<u>  3113B  </u>		<u>  99  </u>
Silicon	<u>  6010B<sup>1</sup>  </u>	<u>  200.7  </u>		<u>  1620  </u>	<u>  99  </u>
Silica	<u>  6010B  </u>	<u>  200.7  </u>		<u>  1620  </u>	<u>  99  </u>
Silver	<u>  6010B  </u> <u>  7761<sup>s</sup>  </u>	<u>  200.7  </u> <u>  272.2  </u>			<u>  99  </u>
Sodium	<u>  6010B  </u> <u>  7770<sup>4</sup>  </u>	<u>  200.7  </u> <u>  273.1<sup>4</sup>  </u>			<u>  99  </u>
Strontium	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Thallium	<u>  6010B  </u> <u>  7841<sup>s</sup>  </u>	<u>  200.7  </u> <u>  279.2  </u> <u>  200.9  </u>			<u>  99  </u>
Tin	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Titanium	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Uranium	<u>  6010B<sup>1</sup>  </u>	<u>  200.7<sup>1</sup>  </u>		<u>  1620  </u>	<u>  99  </u>
Vanadium	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Zinc	<u>  6010B  </u>	<u>  200.7  </u>			<u>  99  </u>
Zirconium	<u>  6010B<sup>1</sup>  </u>	<u>  200.7<sup>1</sup>  </u>		<u>  1620  </u>	<u>  99  </u>

Other:                     

Method:

# METHOD REFERENCES AND DATA QUALIFIERS

## DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

\* = Indicates that the original sample result is greater than 4x the spike amount added.

## ABBREVIATIONS

MB = Method or Preparation Blank.  
MS = Matrix Spike.  
MSD = Matrix Spike Duplicate.  
REP = Sample Replicate  
LCS = Laboratory Control Sample.  
NC = Not calculated.

## ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Flame AA.
4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/04/03

CLIENT: TNUHANFORD B01-090 H2318

LVL LOT #: 0308L247

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	J00WNO	Chromium, Total	9.1	MG/KG	0.1	1.0



Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/04/03

CLIENT: TNUHANFORD B01-090 H2318

LVL LOT #: 0308L247

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK1	03L0496-MB1	Chromium, Total	0.10	MG/KG	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/04/03

CLIENT: TNUHANFORD B01-090 H2318

LVL LOT #: 0308L247

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-001	J00WNO	Chromium, Total	25.1	9.1	17.4	92.0	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/04/03

CLIENT: TNUHANFORD B01-090 H2318

LVL LOT #: 0308L247

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
=====	=====	=====	=====	=====	=====	=====
-001REP	J00WNO	Chromium, Total	9.1	8.7	4.5	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/04/03

CLIENT: TNUHANFORD B01-090 H2318

LVL LOT #: 0308L247

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
=====	=====	=====	=====	=====	=====	=====
LCS1	03L0496-LC1	Chromium, LCS	48.7	50.0	MG/KG	97.4

$A \quad \bar{L}$ 

Relinquished by	Received by	Date	Time
"COMPOSITE WASTE"	ORIGINAL REWRITTEN		

0000-071

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B01-090-021		Page 1 of 1	
Collector R Kerkow		Company Contact R Kerkow		Telephone No. 509-372-2187		Project Coordinator KESSNER, JH		Price Code 8L		Data Turnaround 21 Days	
Object Designation 100-NR-1 TSD Sites R. A. Verification Sampling - Soil		Sampling Location 116-N-1 Trench DZ Verification				SAF No. B01-090		Air Quality <input type="checkbox"/>			
e Chest No. ERC-02-007		Field Logbook No. EL-1524-3		COA R1301N2600		Method of Shipment FED EX					
Shipped To EPA/RECRA		Offsite Property No. RSR 106967				Bill of Lading/Air Bill No. N/A					
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive		Preservation		Cool 4C	Cool 4C	None	Cool 4C	None			
Special Handling and/or Storage None		Type of Container		G	G	G	G	P			
		No. of Container(s)		1	10	1	1	1			
		Volume		20mL	20mL	20mL	20mL	1000mL			
SAMPLE ANALYSIS		ICP Metals - 6010A (TAL) (Chromium)		Chromium Hex - 7196		Mercury - 7471 - (CV)		NO2/NO3 - 353.2		See item (1) in Special Instructions	
						RK 8-11-03		RK 8-11-03		DOSE RATE ON SAMPLE TOGETHER	
										TIE TO:	
										DZ VER	
Sample No.	Matrix *	Sample Date	Sample Time								
J00WN0	SOIL	8-13-03	0920	X	X		X		1.5 mR/hr	J00WL1	X/F1
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Lab COA: R1325N-2F00			
PB Kerkow / PB Kerkow		8-13-03 1600		3728 REF #1A		8-13-03 1600		(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Isotopic Plutonium (Plutonium-239/240); Americium-241; Strontium-89,90 -- Total Sr; Nickel-63; Tritium - H3			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Personnel not available to relinquish samples from the 3728 Ref # 1A on 8/19/03			
REF 1A 3728		8-19-03 0900		SIGALE / JH		8-19-03 0900					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
SIGALE / JH		8-19-03 0900		FED EX							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
FED EX		8/20/03 1010		Kerkow		8/20/03 1010					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
N											
LABORATORY SECTION		Received By		Title		Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time					

# LIONVILLE LABORATORY INCORPORATED

## SAMPLE RECEIPT CHECKLIST

CLIENT: *TNU- HANFORD*

Purchase Order/Project:

DATE: *8/20/03*

SAF# SOW# / Release #: *7301-090*

Laboratory SDG #: *03086247*

**NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION**

- |  |   |                             |   |  |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc?  | <input type="checkbox"/> Yes            | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date)   | <input type="checkbox"/> Yes            | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

*ERC-02-007 5.8°*

Laboratory Sample Custodian:

*[Signature]*

Laboratory Project Manager:

Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B01-090 H2318

RECEIVED  
SEP 2003

DATE RECEIVED: 08/20/03

LVL LOT # :0308L247

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00WN0						
% SOLIDS	001	S	03L%S110	08/13/03	08/22/03	08/24/03
% SOLIDS	001 REP	S	03L%S110	08/13/03	08/22/03	08/24/03
CHROMIUM VI	001	S	03LVI063	08/13/03	08/27/03	08/27/03
CHROMIUM VI	001 REP	S	03LVI063	08/13/03	08/27/03	08/27/03
CHROMIUM VI	001 MS	S	03LVI063	08/13/03	08/27/03	08/27/03
CHROMIUM VI	001 MSD	S	03LVI063	08/13/03	08/27/03	08/27/03
NITRATE NITRITE	001	S	03LN3051	08/13/03	09/05/03	09/05/03
NITRATE NITRITE	001 REP	S	03LN3051	08/13/03	09/05/03	09/05/03
NITRATE NITRITE	001 MS	S	03LN3051	08/13/03	09/05/03	09/05/03

LAB QC:

CHROMIUM VI	MB1	S	03LVI063	N/A	08/27/03	08/27/03
CHROMIUM VI	MB1 BS	S	03LVI063	N/A	08/27/03	08/27/03
CHROMIUM VI	MB1 BSD	S	03LVI063	N/A	08/27/03	08/27/03
NITRATE NITRITE	MB1	S	03LN3051	N/A	09/05/03	09/05/03
NITRATE NITRITE	MB1 BS	S	03LN3051	N/A	09/05/03	09/05/03





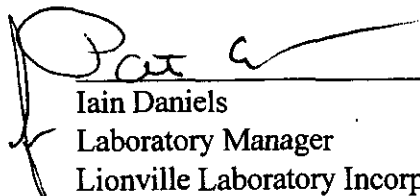
## Analytical Report

Client: TNU-HANFORD B01-090 H2318  
LVL#: 0308L247

W.O.#: 11343-606-001-9999-00  
Date Received: 08-20-03

### INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 solid sample.
2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
7. The matrix spike recoveries for Chromium VI and Nitrate Nitrite were within the 75-125% control limits.
8. The replicate analyses for Percent Solids, Chromium VI and Nitrate Nitrite were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated

09-12-03  
Date

njpl08-247

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

# Lionville Laboratory Incorporated

## WET CHEMISTRY

### METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	— D2216-80		
% Moisture	— D2216-80		— ILMO4.0 (e)
% Solids	— ✓ D2216-80		— ILMO4.0 (e)
% Volatile Solids	— D2216-80		
ASTM Extraction in Water	— D3987-81/85		
BTU	— D240-87		
CEC		— 9081	— c
Chromium VI		— ✓ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		— 1110(mod) — 9045C	
Cyanide, Total		— 9010B	— ILMO4.0 (e)
Cyanide, Reactive		— Section 7.3/9014	
Halides, Extractable Organic		— 9020B	— EPA 600/4/84-008
Halides, Total		— 9020B	— EPA 600/4/84-008
EP Toxicity		— 1310A	
Flash Point		— 1010	
Ignitability		— 1010	
Oil & Grease		— 9071A	
Carbon, Total Organic		— 9060	— Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions — D240-87(mod)		— 5050	
Petroleum Hydrocarbons, Total Recoverable		— 9071	— EPA 418.1
pH, Soil		— 9045C	
Sulfide, Reactive		— Section 7.3/9030B	
Sulfide		— 9030B(mod)	
Specific Gravity	— D1429-76C/	— D5057-90	
Sulfur, Total		— 9056	
Synthetic Preparation Leach		— 1312	
Paint Filter		— 9095A	
Other: <i>Nitrate Nitrite</i>	Method: <i>EPA 353.2(mod.)</i>		
Other:	Method		

## Lionville Laboratory Incorporated

# METHOD REFERENCES AND DATA QUALIFIERS

### DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- \* = Indicates that the original sample result is greater than 4x the spike amount added.

### ABBREVIATIONS

- MB = Method or Preparation Blank.  
MS = Matrix Spike.  
MSD = Matrix Spike Duplicate.  
REP = Sample Replicate  
LC = Laboratory Control Sample.  
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

### ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
  - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
  - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
  - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
  - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
  - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
  - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/11/03

CLIENT: TNUHANFORD B01-090 H2318  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L247

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	J00WN0	% Solids	99.1	%	0.01	1.0
		Chromium VI	0.40 u	MG/KG	0.40	1.0
		Nitrate Nitrite	1.7	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/11/03

CLIENT: TNUHANFORD B01-090 H2318  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L247

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK10	03LV1063-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	03LN3051-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/11/03

CLIENT: TNUHANFORD B01-090 H2318  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L247

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J00WNO	Soluble Chromium VI	4.0	0.40u	4.0	92.5	1.0
		Insoluble Chromium VI	1320	0.40u	1250	104.9	100
		Nitrate Nitrite	5.7	1.7	4.0	100.3	1.0
BLANK10	03LVI063-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.6	1.0
		Insoluble Chromium VI	1220	0.40u	1180	103.2	100
BLANK10	03LN3051-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.8	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/11/03

CLIENT: TNUHANFORD B01-090 H2318

LVL LOT #: 0308L247

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-001REP	J00WNO	% Solids	99.1	99.0	0.071	1.0
		Chromium VI	0.40u	0.40u	NC	1.0
		Nitrate Nitrite	1.7	1.5	14.9	1.0

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

03086247

Client TNK-HANFORD SAF# B01-090

Est. Final Proj. Sampling Date \_\_\_\_\_

Project # 11343-606-001-9999.00

Project Contact/Phone # \_\_\_\_\_

Lionville Laboratory Project Manager OSQC SPEC Del 5FD TAT 21 dayDate Rec'd 8-20-03 Date Due 9-10-03

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Liquid \_\_\_\_\_

Solid \_\_\_\_\_

Volume \_\_\_\_\_

Liquid \_\_\_\_\_

Solid \_\_\_\_\_

Preservatives \_\_\_\_\_

ANALYSES  
REQUESTED →

ORGANIC

VOA

BNA

Pest/

PCB

Herb

4

4

1

1

20

20

1

1

INORG

Metal

CN

NO2

NO3

CHLOR

MATRIX  
CODES:

S - Soil  
 SE - Sediment  
 SO - Solid  
 SL - Sludge  
 W - Water  
 O - Oil  
 A - Air  
 DS - Drum  
 Solids  
 DL - Drum  
 Liquids  
 L - EP/TCLP  
 Leachate  
 WI - Wipe  
 X - Other  
 F - Fish

Lab  
ID

Client ID/Description

Matrix  
QC  
Chosen  
(✓)

MS

MSD

Matrix

Date  
CollectedTime  
Collected

Lionville Laboratory Use Only

MCRT0

IN3N2

ICR6

001 T00WNO

✓

✓

S

8/13/03

0920

✓

1

✓

Special Instructions: SAF # B01-090

## DATE/REVISIONS:

- \_\_\_\_\_ 1. \_\_\_\_\_
- \_\_\_\_\_ 2. \_\_\_\_\_
- \_\_\_\_\_ 3. \_\_\_\_\_
- \_\_\_\_\_ 4. \_\_\_\_\_
- \_\_\_\_\_ 5. \_\_\_\_\_
- \_\_\_\_\_ 6. \_\_\_\_\_

## Lionville Laboratory Use Only

Samples were:

1) Shipped ✓ or  
Hand Delivered \_\_\_\_\_Airbill # See below

2) Ambient or Chilled \_\_\_\_\_

3) Received in Good  
Condition ✓ or N4) Samples  
Properly Preserved ✓ or N5) Received Within  
Holding Times ✓ or N

Tamper Resistant Seal was:

1) Present on Outer  
Package ✓ or N2) Unbroken on Outer  
Package ✓ or N3) Present on Sample  
✓ or N4) Unbroken on  
Sample ✓ or NCOC Record Present  
Upon Sample Rec'd ✓ or NCooler  
Temp. 5-8 °CRelinquished  
byReceived  
by

Date

Time

Relinquished  
byReceived  
by

Date

Time

"COMPOSITE  
WASTE"ORIGINAL  
REWRITTEN
 Discrepancies Between  
 Samples Labels and  
 COC Record? Y or N  
 NOTES:

8393 5074 7881



<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				<b>B01-090-021</b>		Page 1 of 1			
Collector R Kerkow		Company Contact R Kerkow		Telephone No. 509-372-2187		Project Coordinator KESSNER, JH		Price Code 8L      Data Turnaround 21 Days			
Project Designation 100-NR-1 TSD Sites R. A. Verification Sampling - Soil		Sampling Location 116-N-1 Trench DZ Verification		SAF No. B01-090		Air Quality <input type="checkbox"/>					
Ice Chest No. <b>ERC-02-007</b>		Field Logbook No. EL-1524-3		COA R1301N2600		Method of Shipment <b>FED EX</b>					
Shipped To TMA/RECRA		Offsite Property No. <b>RSR 106967</b>		Bill of Lading/Air Bill No. <b>N/A</b>							
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>  Potentially Radioactive  <b>Special Handling and/or Storage</b> None			<b>Preservation</b>	Cool 4C	Cool 4C	None	Cool 4C	None			
			<b>Type of Container</b>	G	G	G	G	P			
			<b>No. of Container(s)</b>	1	10	10	1	1			
			<b>Volume</b>	20mL	20mL	20mL	20mL	1000mL			
<b>SAMPLE ANALYSIS</b>				ICP Metals - 6010A (TAL) (Chromium)	Chromium Hex - 7196	Mercury - 7471 - (CV)	NO2/NO3 - 353.2	See item (1) in Special Instructions	<b>DOSE RATE ON SAMPLES TOGETHER</b>	<b>TIE TO:</b>	
Sample No.	Matrix *	Sample Date	Sample Time								
J00WN0	SOIL	8-13-03	0920	X	X		X		1.5mL/12	J00WLI	
<b>CHAIN OF POSSESSION</b>				<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b>  Se=Soil SE=Sediment SO=Solid SI=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
PB Kerkow / PB Kerkow		8-13-03 1600		3728 REF #1A		8-13-03 1600					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
REF #1A 3728		8-19-03 0900		SUGALE / JAL		8-19-03 0900					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
SUGALE / JAL		8-19-03 0900		FED EX							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
FED EX		8/20/03 1010		Paul Hand		8/20/03 1010					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
<b>LABORATORY SECTION</b>				<b>Disposal Method</b>				<b>Disposed By</b>			
Received By				Title				Date/Time			
FINAL SAMPLE DISPOSITION				Disposal Method				Date/Time			

# LIONVILLE LABORATORY INCORPORATED

## SAMPLE RECEIPT CHECKLIST

CLIENT: *TNUL - HANFORD*

Purchase Order/Project:

DATE: *8/20/03*

SAF# SOW# / Release #: *T301-090*

Laboratory SDG #: *03086247*

**NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION**

- |  |   |                             |   |  |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc?  | <input type="checkbox"/> Yes            | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date)   | <input type="checkbox"/> Yes            | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

*ERC-02-007 5.8°*

Laboratory Sample Custodian:

Laboratory Project Manager:



# EBERLINE

SERVICES

September 10, 2003

Ms. Joan Kessner  
Bechtel Hanford Inc.  
3350 George Washington Way  
Richland, WA 99352  
MSIN: H0-025

Reference: **P.O. #630**  
**Eberline Services: R3-08-101-7571, SDG H2318**

Dear Ms. Kessner:

Enclosed is the data report for one solid sample designated under SAF No. B01-090 received at Eberline Services on August 20, 2003. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion  
Program Manager

MCM

Enclosure: Data Package



Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

## 1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2318 was composed of one solid (soil) sample designated under SAF No. B01-090 with a Project Designation of: 100-NR-1 TSD Sites R.A. Verifications Sampling Soil.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-fax on September 10, 2003.

## 2.0 ANALYSIS NOTES

### 2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

### 2.2 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

### 2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

### 2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

### 2.5 Americium-241 Analyses

No problems were encountered during the course of the analyses.

### 2.6 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

## Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

  
\_\_\_\_\_  
Melissa C. Mannion  
Program Manager

  
\_\_\_\_\_  
Date

EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Case no SDG\_H2318

S U M M A R Y   D A T A   S E C T I O N

T A B L E   O F   C O N T E N T S				
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Melissa Mannion  
Prepared by

Melissa Mannion  
Reviewed by

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-TOC  
Version 3.06  
Report date 09/10/03

# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

## REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG\_H2318

### ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

#### SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

#### PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

#### WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

#### METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

#### LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

#### REPORT GUIDES

Page 1

#### SUMMARY DATA SECTION

Page 1

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 09/10/03

# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford  
Contract No. 630  
Case no SDG\_H2318

## ABOUT THE DATA SUMMARY SECTION

### DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

### MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

### DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

### METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

### REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

### REPORT GUIDES

Page 2

### SUMMARY DATA SECTION

Page 2

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 09/10/03

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

## LAB SAMPLE SUMMARY

SDG 7571

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2318

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R308101-01	J00WNO	116-N-1 Trench DZ Verif.	SOLID		B01-090	B01-090-021	08/13/03 09:20
R308101-02	Lab Control Sample		SOLID		B01-090		
R308101-03	Method Blank		SOLID		B01-090		
R308101-04	Duplicate (R308101-01)	116-N-1 Trench DZ Verif.	SOLID		B01-090		08/13/03 09:20

LAB SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-LS

Version 3.06

Report date 09/10/03



# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

## QC SUMMARY

SDG 7571

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2318

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7571	B01-090-021	J00WNO	SOLID	99.5	38.59 g		08/20/03 7	R308101-01	7571-001
		Method Blank	SOLID					R308101-03	7571-003
		Lab Control Sample	SOLID					R308101-02	7571-002
		Duplicate (R308101-01)	SOLID	99.5	38.59 g		08/20/03 7	R308101-04	7571-004

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-QS

Version 3.06

Report date 09/10/03

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571

Contact Melissa C. Mannion

## PREP BATCH SUMMARY

Client Hanford

Contract No. 630

Case no SDG H2318

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED				QUALI-		
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Alpha Spectroscopy											
AM	SOLID	Americium 241 in Soil	7078-041	5.0	1			1	1	1/1	
PU	SOLID	Plutonium, Isotopic in Solids	7078-041	5.0	1			1	1	1/1	
Beta Counting											
SR	SOLID	Total Strontium in Soil	7078-041	10.0	1			1	1	1/1	
Gamma Spectroscopy											
GAM	SOLID	Gamma Scan	7078-041	15.0	1			1	1	1/1	
Liquid Scintillation Counting											
H	SOLID	Tritium in Soil	7078-041	10.0	1			1	1	1/1	
NI_L	SOLID	Nickel 63 in Soil	7078-041	10.0	1			1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

Page 1

SUMMARY DATA SECTION

Page 5

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-PBS

Version 3.06

Report date 09/10/03

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

## LAB WORK SUMMARY

SDG 7571

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2318

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
R308101-01	J00WNO			7571-001	AM		09/04/03	09/09/03	MWT	Americium 241 in Soil
08/13/03	116-N-1 Trench DZ Verif.		SOLID	7571-001	GAM		08/27/03	09/09/03	MWT	Gamma Scan
08/20/03	801-090-021	801-090		7571-001	H		08/28/03	09/09/03	MWT	Tritium in Soil
				7571-001	NI_L		09/06/03	09/09/03	MWT	Nickel 63 in Soil
				7571-001	PU		09/05/03	09/09/03	MWT	Plutonium, Isotopic in Solids
				7571-001	SR		09/03/03	09/10/03	MWT	Total Strontium in Soil
R308101-02	Lab Control Sample			7571-002	AM		09/04/03	09/09/03	MWT	Americium 241 in Soil
			SOLID	7571-002	GAM		08/28/03	09/09/03	MWT	Gamma Scan
		801-090		7571-002	H		08/29/03	09/09/03	MWT	Tritium in Soil
				7571-002	NI_L		09/06/03	09/09/03	MWT	Nickel 63 in Soil
				7571-002	PU		09/05/03	09/09/03	MWT	Plutonium, Isotopic in Solids
				7571-002	SR		09/03/03	09/10/03	MWT	Total Strontium in Soil
R308101-03	Method Blank			7571-003	AM		09/04/03	09/09/03	MWT	Americium 241 in Soil
			SOLID	7571-003	GAM		08/28/03	09/09/03	MWT	Gamma Scan
		801-090		7571-003	H		08/28/03	09/09/03	MWT	Tritium in Soil
				7571-003	NI_L		09/06/03	09/09/03	MWT	Nickel 63 in Soil
				7571-003	PU		09/05/03	09/09/03	MWT	Plutonium, Isotopic in Solids
				7571-003	SR		09/03/03	09/10/03	MWT	Total Strontium in Soil
R308101-04	Duplicate (R308101-01)			7571-004	AM		09/04/03	09/09/03	MWT	Americium 241 in Soil
08/13/03	116-N-1 Trench DZ Verif.		SOLID	7571-004	GAM		08/29/03	09/09/03	MWT	Gamma Scan
08/20/03		801-090		7571-004	H		08/28/03	09/09/03	MWT	Tritium in Soil
				7571-004	NI_L		09/06/03	09/09/03	MWT	Nickel 63 in Soil
				7571-004	PU		09/05/03	09/09/03	MWT	Plutonium, Isotopic in Solids
				7571-004	SR		09/03/03	09/10/03	MWT	Total Strontium in Soil

WORK SUMMARY

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Lab id EBRLNE

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

WORK SUMMARY, cont.

SDG 7571

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2318

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B01-090	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
GAM	B01-090	Gamma Scan	GAMMA_GS	1			1	1	1	4
H	B01-090	Tritium in Soil	TRITIUM_COX_LSC	1			1	1	1	4
NI_L	B01-090	Nickel 63 in Soil	NI63_LSC	1			1	1	1	4
PU	B01-090	Plutonium, Isotopic in Solids	PUIISO_PLATE_AEA	1			1	1	1	4
SR	B01-090	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TOTALS				6			6	6	6	24

WORK SUMMARY

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**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP H2318**

7571-003

Method Blank

**METHOD BLANK**

SDG <u>7571</u>	Client/Case no <u>Hanford</u>	SDG <u>H2318</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R308101-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7571-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B01-090</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-1.38	0.73	1.3	400	U	H
Nickel 63	13981-37-8	0.450	0.65	1.1	30	U	NI_L
Total Strontium	SR-RAD	0.056	0.18	0.36	1.0	U	SR
Plutonium 238	13981-16-3	0.012	0.012	0.046	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.012	0.046	1.0	U	PU
Americium 241	14596-10-2	0.033	0.066	0.13	1.0	U	AM
Potassium 40	13966-00-2	U		5.0		U	GAM
Cobalt 60	10198-40-0	U		0.38	0.050	U	GAM
Cesium 137	10045-97-3	U		0.34	0.10	U	GAM
Radium 226	13982-63-3	U		0.47		U	GAM
Radium 228	15262-20-1	U		1.6		U	GAM
Europium 152	14683-23-9	U		0.66	0.10	U	GAM
Europium 154	15585-10-1	U		0.82	0.10	U	GAM
Europium 155	14391-16-3	U		0.59	0.10	U	GAM
Thorium 228	14274-82-9	U		0.36		U	GAM
Thorium 232	TH-232	U		1.6		U	GAM
Uranium 235	15117-96-1	U		0.86		U	GAM
Uranium 238	U-238	U		36		U	GAM
Americium 241	14596-10-2	U		0.65		U	GAM

100-NR-1 TSD Sites R.A. Verifi. Smpl

QC-BLANK 45487
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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
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Version <u>3.06</u>
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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H2318

7571-002

Lab Control Sample

**LAB CONTROL SAMPLE**

SDG <u>7571</u> Contact <u>Melissa C. Mannion</u>  Lab sample id <u>R308101-02</u> Dept sample id <u>7571-002</u>	Client/Case no <u>Hanford</u> SDG <u>H2318</u> Contract <u>No. 630</u>  Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>B01-090</u>
---	--

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	236	3.2	1.2	400		H	256	10	92	85-115	80-120
Nickel 63	106	2.2	1.1	30		NI_L	114	4.6	93	85-115	80-120
Total Strontium	21.7	1.2	0.41	1.0		SR	20.9	0.84	104	81-119	80-120
Plutonium 238	11.3	0.77	0.045	1.0		PU	12.2	0.49	93	87-113	80-120
Plutonium 239/240	12.8	0.84	0.045	1.0		PU	13.2	0.53	97	87-113	80-120
Americium 241	9.24	0.93	0.099	1.0		AM	9.52	0.38	97	83-117	80-120
Cobalt 60	22.2	0.75	<u>0.36</u>	0.050		GAM	21.9	0.88	101	76-124	80-120
Cesium 137	23.1	0.61	<u>0.40</u>	0.10		GAM	21.9	0.88	106	75-125	80-120

100-NR-1 TSD Sites R.A. Verifi. Smpl

QC-LCS 45486

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

7571-004

J00WNO

## DUPLICATE

SDG <u>7571</u>	Client/Case no <u>Hanford</u>	SDG <u>H2318</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R308101-04</u>	Lab sample id <u>R308101-01</u>	Client sample id <u>J00WNO</u>
Dept sample id <u>7571-004</u>	Dept sample id <u>7571-001</u>	Location/Matrix <u>116-N-1 Trench DZ Verifi. SOLID</u>
	Received <u>08/20/03</u>	Collected/Weight <u>08/13/03 09:20 38.59 g</u>
% solids <u>99.5</u>	% solids <u>99.5</u>	Custody/SAF No <u>B01-090-021</u> <u>B01-090</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	19.5	12	20	400	U	H	-3.66	13	22	U	-	
Nickel 63	2420	75	55	30		NI_L	2370	72	52		2	22
Total Strontium	2260	120	40	1.0		SR	2150	84	19		5	23
Plutonium 238	119	14	2.4	1.0		PU	113	14	2.6		5	28
Plutonium 239/240	746	48	2.4	1.0		PU	700	48	2.6		6	18
Americium 241	643	64	5.5	1.0		AM	629	66	6.1		2	24
Potassium 40	U		59		U	GAM	U		54	U	-	
Cobalt 60	9560	26	16	0.050		GAM	9460	23	15		1	32
Cesium 137	96100	60	35	0.10		GAM	96500	50	31		0	32
Radium 226	U		25		U	GAM	U		23	U	-	
Radium 228	U		50		U	GAM	U		45	U	-	
Europium 152	U		42	0.10	U	GAM	U		38	U	-	
Europium 154	102	22	28	0.10		GAM	92.8	18	24		9	54
Europium 155	U		36	0.10	U	GAM	U		21	U	-	
Thorium 228	U		17		U	GAM	U		15	U	-	
Thorium 232	U		50		U	GAM	U		45	U	-	
Uranium 235	U		35		U	GAM	U		32	U	-	
Uranium 238	U		1600		U	GAM	U		1500	U	-	
Americium 241	446	20	29			GAM	443	18	27		1	33

100-NR-1 TSD Sites R.A. Verifi. SmpI

QC-DUP#1 45488

### DUPLICATES

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-DUP

Version 3.06

Report date 09/10/03

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP H2318**

7571-001

J00WN0

**D A T A   S H E E T**

SDG <u>7571</u>	Client/Case no <u>Hanford</u>	SDG <u>H2318</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R308101-01</u>	Client sample id <u>J00WN0</u>	
Dept sample id <u>7571-001</u>	Location/Matrix <u>116-N-1 Trench DZ Verif. SOLID</u>	
Received <u>08/20/03</u>	Collected/Weight <u>08/13/03 09:20 38.59 g</u>	
% solids <u>99.5</u>	Custody/SAF No <u>B01-090-021</u>	<u>B01-090</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-3.66	13	22	400	U	H
Nickel 63	13981-37-8	2370	72	52	30		NI_L
Total Strontium	SR-RAD	2150	84	19	1.0		SR
Plutonium 238	13981-16-3	113	14	2.6	1.0		PU
Plutonium 239/240	PU-239/240	700	48	2.6	1.0		PU
Americium 241	14596-10-2	629	66	6.1	1.0		AM
Potassium 40	13966-00-2	U		54		U	GAM
Cobalt 60	10198-40-0	9460	23	15	0.050		GAM
Cesium 137	10045-97-3	96500	50	31	0.10		GAM
Radium 226	13982-63-3	U		23		U	GAM
Radium 228	15262-20-1	U		45		U	GAM
Europium 152	14683-23-9	U		38	0.10	U	GAM
Europium 154	15585-10-1	92.8	18	24	0.10		GAM
Europium 155	14391-16-3	U		21	0.10	U	GAM
Thorium 228	14274-82-9	U		15		U	GAM
Thorium 232	TH-232	U		45		U	GAM
Uranium 235	15117-96-1	U		32		U	GAM
Uranium 238	U-238	U		1500		U	GAM
Americium 241	14596-10-2	443	18	27			GAM

100-NR-1 TSD Sites R.A. Verifi. Smpl

**DATA SHEETS**

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
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Report date <u>09/10/03</u>



## EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

Test AM Matrix SOLID  
 SDG 7571  
 Contact Melissa C. Mannion

## LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford  
 Contract No. 630  
 Contract SDG H2318

## RESULTS

LAB	RAW	SUF-		Americium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	241

Preparation batch 7078-041

R308101-01	7571-001	J00WNO	629
R308101-02	7571-002	LCS (QC ID=45486)	ok
R308101-03	7571-003	BLK (QC ID=45487)	U
R308101-04	7571-004	Duplicate (R308101-01)	ok

Nominal values and limits from method RDLs (pCi/g) 1.0  
 100-NR-1 TSD Sites R.A. Verifi. Smpl

## METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7078-041 2σ prep error 5.0 % Reference Lab Notebook 7078 pg. 041

R308101-01	J00WNO	6.1	0.0200	68	123	22	09/04/03	09/04	SS-059
R308101-02	LCS (QC ID=45486)	0.099	1.00	82	123	09/04/03	09/04	SS-060	
R308101-03	BLK (QC ID=45487)	0.13	1.00	63	123	09/04/03	09/04	SS-061	
R308101-04	Duplicate (R308101-01)	5.5	0.0200	73	123	22	09/04/03	09/04	SS-062
	(QC ID=45488)								

Nominal values and limits from method 1.0 1.00 20-105 100 100 180

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
CP-061	Determinatioin of Moisture Content in Solid Samples, rev 1	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 5	
CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 3	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA	3.0 ± 6.6
FOR 4 SAMPLES	YIELD	72 ± 16

## METHOD SUMMARIES

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## SUMMARY DATA SECTION

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Lab id	EBRLNE
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# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

Test PU Matrix SOLID  
SDG 7571  
Contact Melissa C. Mannion

## LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford  
Contract No. 630  
Contract SDG H2318

## RESULTS

LAB	RAW	SUF-	Plutonium	Plutonium	
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	238	239/240

Preparation batch 7078-041

R308101-01	7571-001	J00WNO	113	700
R308101-02	7571-002	LCS (QC ID=45486)	ok	ok
R308101-03	7571-003	BLK (QC ID=45487)	U	U
R308101-04	7571-004	Duplicate (R308101-01)	ok	ok

Nominal values and limits from method	RDIs (pCi/g)	1.0	1.0
100-NR-1 TSD Sites R.A. Verifi. Smpl			

## METHOD PERFORMANCE

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7078-041 2σ prep error 5.0 % Reference Lab Notebook 7078 pg. 041

R308101-01	J00WNO	2.6	0.0200	63	308	23	09/05/03	09/05	SS-059
R308101-02	LCS (QC ID=45486)	0.045	1.00	71	309	09/05/03	09/05	SS-060	
R308101-03	BLK (QC ID=45487)	0.046	1.00	69	309	09/05/03	09/05	SS-061	
R308101-04	Duplicate (R308101-01)	2.4	0.0200	68	309	23	09/05/03	09/05	SS-062
	(QC ID=45488)								

Nominal values and limits from method	1.0	1.00	20-105	100	100	180
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PROCEDURES	REFERENCE	PUISO_PLATE_AEA
CP-061		Determination of Moisture Content in Solid Samples, rev 1
CP-070		Soil Dissolution, < 1.0g Aliquot, rev 5
CP-941		Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 1
CP-008		Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	1.3	±	2.8
FOR 4 SAMPLES	YIELD	68	±	7

## METHOD SUMMARIES

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## SUMMARY DATA SECTION

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# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

Test SR Matrix SOLID  
SDG 7571  
Contact Melissa C. Mannion

## LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL  
BETA COUNTING

Client Hanford  
Contract No. 630  
Contract SDG H2318

## RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Strontium

Preparation batch 7078-041

R308101-01		7571-001	J00WNO	2150
R308101-02		7571-002	LCS (QC ID=45486)	ok
R308101-03		7571-003	BLK (QC ID=45487)	U
R308101-04		7571-004	Duplicate (R308101-01)	ok

Nominal values and limits from method RDLs (pCi/g) 1.0  
100-NR-1 TSD Sites R.A. Verifi. Smpl

## METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED

Preparation batch 7078-041 2σ prep error 10.0 % Reference Lab Notebook 7078 pg. 041

R308101-01		J00WNO	19	0.0200			82	57				21	09/03/03
R308101-02		LCS (QC ID=45486)	0.41	1.00			82	57					09/03/03
R308101-03		BLK (QC ID=45487)	0.36	1.00			80	100					09/03/03
R308101-04		Duplicate (R308101-01) (QC ID=45488)	40	0.0100			83	72				21	09/03/03

Nominal values and limits from method 1.0 1.00 30-105 100 180

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
CP-061		Determinatioin of Moisture Content in Solid Samples, rev 1
CP-070		Soil Dissolution, < 1.0g Aliquot, rev 5
CP-381		Strontium in Solids, rev 1

AVERAGES ± 2 SD	MDA	15 ± 38
FOR 4 SAMPLES	YIELD	82 ± 3

## METHOD SUMMARIES

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## SUMMARY DATA SECTION

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Lab id	EBRLNE
Protocol	Hanford
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# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

## LAB METHOD SUMMARY

GAMMA SCAN  
GAMMA SPECTROSCOPY

Test GAM Matrix SOLID  
SDG 7571  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Contract SDG\_H2318

## RESULTS

LAB RAW SUF-  
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Cobalt 60 Cesium 137

Preparation batch 7078-041

R308101-01	7571-001	J00WNO	9460	96500
R308101-02	7571-002	LCS (QC ID=45486)	ok	ok
R308101-03	7571-003	BLK (QC ID=45487)	U	U
R308101-04	7571-004	Duplicate (R308101-01)	ok	ok

Nominal values and limits from method RDLs (pCi/g) 0.050 0.10  
100-NR-1 TSD Sites R.A. Verifi. Smpl

## METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-  
SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7078-041 2σ prep error 15.0 % Reference Lab Notebook 7078 pg. 041

R308101-01	J00WNO	120	10.5	525	14	08/25/03	08/27	SP,03,00
R308101-02	LCS (QC ID=45486)	0.36	10.5	1021		08/25/03	08/28	SP,03,00
R308101-03	BLK (QC ID=45487)	2.1	10.5	408		08/25/03	08/28	SP,03,00
R308101-04	Duplicate (R308101-01) (QC ID=45488)	130	10.5	434	16	08/25/03	08/29	SP,03,00

Nominal values and limits from method 0.050 10.5 100 180

PROCEDURES REFERENCE GAMMA\_GS  
CP-100 Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES ± 2 SD MDA 63 ± 140  
FOR 4 SAMPLES YIELD \_\_\_\_\_ ± \_\_\_\_\_

## METHOD SUMMARIES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
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# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

## LAB METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Test H Matrix SOLID  
SDG 7571  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Contract SDG H2318

## RESULTS

LAB RAW SUF-  
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Tritium

Preparation batch 7078-041

R308101-01	7571-001	J00WNO	U
R308101-02	7571-002	LCS (QC ID=45486)	ok
R308101-03	7571-003	BLK (QC ID=45487)	U
R308101-04	7571-004	Duplicate (R308101-01)	- U

Nominal values and limits from method RDLs (pCi/g) 400  
100-NR-1 TSD Sites R.A. Verifi. Smpl

## METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7078-041 2σ prep error 10.0 % Reference Lab Notebook 7078 pg. 041

R308101-01	J00WNO	22	0.0594	100	120	15	08/28/03	08/28	LSC-004
R308101-02	LCS (QC ID=45486)	1.2	1.00	100	120		08/28/03	08/29	LSC-004
R308101-03	BLK (QC ID=45487)	1.3	1.00	100	120		08/28/03	08/28	LSC-004
R308101-04	Duplicate (R308101-01) (QC ID=45488)	20	0.0645	100	120	15	08/28/03	08/28	LSC-004

Nominal values and limits from method 400 1.00 25 180

PROCEDURES REFERENCE TRITIUM\_COX\_LSC  
CP-251 Tritium/Carbon-14 Oxidation, rev 5

AVERAGES ± 2 SD MDA 11 ± 23  
FOR 4 SAMPLES YIELD 100 ± 0

## METHOD SUMMARIES

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## SUMMARY DATA SECTION

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Lab id EBRLINE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-LMS  
Version 3.06  
Report date 09/10/03

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2318

Test NI L Matrix SOLID  
SDG 7571  
Contact Melissa C. Mannion

## LAB METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford  
Contract No. 630  
Contract SDG H2318

## RESULTS

LAB RAW SUF-  
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7078-041

R308101-01	7571-001	J00WNO	2370
R308101-02	7571-002	LCS (QC ID=45486)	ok
R308101-03	7571-003	BLK (QC ID=45487)	U
R308101-04	7571-004	Duplicate (R308101-01)	ok

Nominal values and limits from method RDLs (pCi/g) 30  
100-NR-1 TSD Sites R.A. Verifi. Smpl

## METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR

Preparation batch 7078-041 2σ prep error 10.0 % Reference Lab Notebook 7078 pg. 041

R308101-01	J00WNO		52	0.0200			98	100			24	09/05/03	09/06 LSC-004
R308101-02	LCS (QC ID=45486)		1.1	1.00			96	78				09/05/03	09/06 LSC-004
R308101-03	BLK (QC ID=45487)		1.1	1.00			93	100				09/05/03	09/06 LSC-004
R308101-04	Duplicate (R308101-01)		55	0.0200			93	100			24	09/05/03	09/06 LSC-004
	(QC ID=45488)												

Nominal values and limits from method 30 1.00 30-105 50 180

PROCEDURES	REFERENCE	NI63_LSC
CP-061	Determination of Moisture Content in Solid Samples, rev 1	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 5	
CP-280	Nickel-63 Purification, rev 0	

AVERAGES ± 2 SD	MDA 27 ± 61
FOR 4 SAMPLES	YIELD 95 ± 5

## METHOD SUMMARIES

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## SUMMARY DATA SECTION

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Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	09/10/03

# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

## REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG H2318

## SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- \* LAB SAMPLE ID is the lab's primary identification for a sample.
- \* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- \* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- \* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- \* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

### REPORT GUIDES

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### SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
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Report date 09/10/03

# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

## REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG\_H2318

### PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- \* The preparation batches are shown in the same order as the Method Summary Reports are printed.
- \* Only analyses of planchets relevant to the SDG are included.
- \* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- \* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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#### SUMMARY DATA SECTION

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Version Ver 1.0  
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Version 3.06  
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SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

## REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG\_H2318

## WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- \* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- \* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- \* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- \* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- \* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- \* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

### REPORT GUIDES

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### SUMMARY DATA SECTION

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Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
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Report date 09/10/03

# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

## REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG H2318

## DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- \* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- \* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- \* ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- \* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- \* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

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### SUMMARY DATA SECTION

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Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
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# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. 630  
Case no SDG\_H2318

## DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
  - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
  - H Similar to 'L' except the recovery was high.
  - P The RESULT is 'preliminary'.
  - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
  - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- \* An MDA is underlined if it is bigger than its RDL.

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### SUMMARY DATA SECTION

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Form DVD-RG  
Version 3.06  
Report date 09/10/03

# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. 630  
Case no SDG H2318

## DATA SHEET

- \* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- \* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- \* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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### SUMMARY DATA SECTION

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Lab id EBRLNE  
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SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

## REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG H2318

### LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- \* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- \* The first, computed limits for the recovery reflect:
  1. The error of RESULT, including that introduced by rounding the result prior to printing.
 

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
  2. The error of ADDED.
  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- \* The second limits are protocol defined upper and lower QC limits for the recovery.
- \* The recovery is underlined if it is outside either of these ranges.

#### REPORT GUIDES

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#### SUMMARY DATA SECTION

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Lab id EBRLNE  
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Form DVD-RG  
Version 3.06  
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# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

## REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG H2318

### DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- \* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- \* The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

#### REPORT GUIDES

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#### SUMMARY DATA SECTION

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# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
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Case no SDG\_H2318

## DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- \* The RPD is underlined if it is greater than either limit.
- \* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- \* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

### REPORT GUIDES

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### SUMMARY DATA SECTION

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Lab id EBRLNE  
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Report date 09/10/03

# EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

## REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG H2318

## MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- \* The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- \* The second limits are protocol defined upper and lower QC limits

### REPORT GUIDES

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### SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H2318

SDG 7571

Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford

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Case no SDG\_H2318

## MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- \* The recovery is underlined (out of spec) if it is outside either of these ranges.

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### SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- \* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- \* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- \* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- \* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- \* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H2318

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GUIDE, cont.

Client Hanford  
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## METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- \* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- \* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- \* Aliquots are underlined if less than the nominal value specified for the method.
- \* Preparation factors are underlined if greater than the nominal value specified for the method.
- \* Dilution factors are underlined if greater than the nominal value specified for the method.
- \* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- \* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- \* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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### SUMMARY DATA SECTION

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Lab id EBRLNE  
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SAMPLE DELIVERY GROUP H2318

SDG 7571  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
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## METHOD SUMMARY

- \* Count times are underlined if less than the nominal value specified for the method.
- \* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- \* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- \* Days Held are underlined if greater than the holding time specified in the protocol.
- \* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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### SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H2318

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Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
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Case no SDG H2318

## METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				<b>B01-090-021</b>		Page 1 of 1			
Collector R Kerkow		Company Contact R Kerkow		Telephone No. 509-372-2187		Project Coordinator KESSNER, JH		Price Code 8L      Data Turnaround 21 Days			
Project Designation 100-NR-1 TSD Sites R. A. Verification Sampling - Soil		Sampling Location 116-N-1 Trench DZ Verification		H2318 (7571)		SAF No. B01-090		Air Quality <input type="checkbox"/>			
Ice Chest No. <b>ERC 03 102</b>		Field Logbook No. EL-1524-3		COA R130IN2600		Method of Shipment <b>FED EX</b>					
Shipped To <b>RL 8-11-03</b> TMA/REGRA		Offsite Property No. <b>RSR 106 966</b>		Bill of Lading/Air Bill No. <b>N/A</b>							
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>  Potentially Radioactive  <b>Special Handling and/or Storage</b>  None			<b>Preservation</b>		Cool 4C	Cool 4C	None	Cool 4C	None		
			<b>Type of Container</b>		G	G	G	G	+ RL 8-11-03		
			<b>No. of Container(s)</b>		1	1	1	1	1 <b>RL 8-11-03</b>		
			<b>Volume</b>		250mL	120mL	60mL	120mL	1000mL <b>RL 8-11-03</b>		
<b>SAMPLE ANALYSIS</b>					ICP Metals - 6010A (TAL) (Chromium)	Chromium Hex - 7196	Mercury - 7471 (CV)	NO2/NO3 - 3532	See item (1) in Special Instructions.		
					<b>RL 8-11-03</b>	<b>RL 8-11-03</b>	<b>RL 8-11-03</b>	<b>RL 8-11-03</b>	<b>RL 8-11-03</b>	<b>DOSE RATE ON THREE CONTAINERS TOGETHER</b>	<b>TIE TO:</b>
Sample No.	Matrix *	Sample Date	Sample Time								
J00WN0	SOIL	8-13-03	0920					X	1.5mR/hr		
									J00WLI		
									VXF1		
<b>CHAIN OF POSSESSION</b>				<b>SPECIAL INSTRUCTIONS</b>					<b>Matrix *</b> S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wt=Wipe L=Liquid V=Vegetation X=Other		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Lab COA: R1325N-2P00  (1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Isotopic Plutonium (Plutonium-239/240); Americium-241; Strontium-89,90 - Total Sr; Nickel-63; Tritium - H3  Personnel not available to relinquish samples from the 3728 Ref # 1A on 8/19/03			
RB Kerkow / RB Kerkow		8-13-03 1600		3728, Ref # 1A		8-13-03 1600					
REF 1A 3728		8-19-03 0900		S. J. GALE / S. J. GALE		8-19-03 0900					
S. J. GALE / S. J. GALE		8-19-03 0900		FED EX							
FED EX				Jm		8-20-03 DCU					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
<b>LABORATORY SECTION</b>		Received By				Title				Date/Time	
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method				Disposed By				Date/Time	

**RICHMOND, CA LABORATORY**  
**SAMPLE RECEIPT CHECKLIST**

Client: BH1 Date/Time received 1000 8-20-13  
CoC No. B01-090-021  
Container I.D. No. ERC-03-102 Requested TAT (Days) 21 P.O. Received Yes [ ] No [ ]

## INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 1
7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)
8. Samples are in correct container Yes [✓] No [ ]
9. Paperwork agrees with samples? Yes [✓] No [ ]
10. Samples have: Tape [✓] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [ ]
11. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [✓] pH \_\_\_\_\_ Preservative \_\_\_\_\_
13. Describe any anomalies: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_
15. Received by: [Signature] Date: 8-20-03 Time: 1000

[illegible]

Ion Chamber Ser. No. \_\_\_\_\_

Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_

Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. 100782

Calibration date 6-27-02